World Academy of Science, Engineering and Technology
International Journal of Computer and Information Engineering
Vol:13, No:07, 2019

Fast Fourier Transform-Based Steganalysis of Covert Communications over Streaming Media

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Abstract : Steganalysis seeks to detect the presence of secret data embedded in cover objects, and there is an imminent demand to detect hidden messages in streaming media. This paper shows how a steganalysis algorithm based on Fast Fourier Transform (FFT) can be used to detect the existence of secret data embedded in streaming media. The proposed algorithm uses machine parameter characteristics and a network sniffer to determine whether the Internet traffic contains streaming channels. The detected streaming data is then transferred from the time domain to the frequency domain through FFT. The distributions of power spectra in the frequency domain between original VoIP streams and stego VoIP streams are compared in turn using t-test, achieving the p-value of 7.5686E-176 which is below the threshold. The results indicate that the proposed FFT-based steganalysis algorithm is effective in detecting the secret data embedded in VoIP streaming media.

Keywords : steganalysis, security, Fast Fourier Transform, streaming media
Conference Title : ICCSE 2019 : International Conference on Computer Science and Engineering
Conference Location : Paris, France
Conference Dates : July 18-19, 2019